Installation Guide — iMcV-MediaLinX TX/FX

About iMcV-MediaLinX TX/FX

iMcV-MediaLinX TX/FX™ is an SNMP-manageable, IEEE 802.3 10/100 switching media converter from IMC Networks which converts both speed and media. *iMcV-MediaLinX TX/FX* modules provide a single conversion between:

- 10Base-T twisted pair and 100Base-FX multi-mode fiber, or
- 10Base-T twisted pair and 100Base-FX single-mode fiber, or
- 100Base-TX twisted pair and 100Base-FX multi-mode fiber, or
- 100Base-TX twisted pair and 100Base-FX single-mode fiber.

iMcV-MediaLinX TX/FX modules feature one RJ-45 connector, one pair of ST or SC fiber connectors and requires one slot in an SNMP-manageable ***iMediaCenter***™ or ***iMcV***™ series chassis from IMC Networks.

iMcV-MediaLinX TX/FX is part of IMC Networks' ***iMcV Series***. Installation instructions for other *iMcV Modules* can be found in the *"iMcV Module Installation Guide"* or in their respective installation guides. Install guides, as well as a variety of product literature and other information, can be found on the IMC Networks Web site at **http://www.imcnetworks.com/tech/techsup.asp.**

Configuration Instructions

End-users may configure *iMcV-MediaLinX TX/FX* modules for various features. See the *DIP Switch Location and Configuration Settings* chart on page 2 for information. The following sections include instructions for configuring both managed (via an SNMP-compatible management application like *iView²*) and unmanaged modules.

Managed Modules

To manage one or more *iMcV Series* modules, an SNMP agent must be also present in the chassis: *iMediaCenter* series chassis include embedded management; *iMcV series* chassis require an *iMcV-Master Module*. When configuring managed modules, install the module first (see page 4), then configure it using the management software. Within *iView²* for *Media Converters,* features and troubleshooting functions are configured in the Module Detail section under the picture of the module. See the *iView²* online help file for more information.

N O T E

Management software will override any hardware settings (e.g., jumper, switch, etc.), so you MUST configure a module that will be managed via the software. Until a module installed in a managed chassis is configured via the software, the module (and its LEDs) may not work properly.

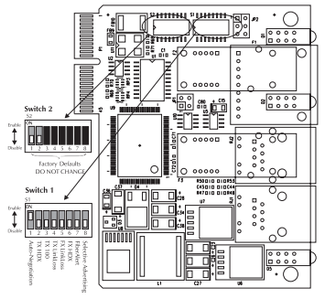
Unmanaged Modules

Before installing, *iMcV-MediaLinx TX/FX* modules may be configured for *LinkLoss, FiberAlert, Auto-Negotiation*, duplex mode and speed. The illustrations on page 2 include the available Dip Switch locations and configuration settings for the *iMcV-MediaLinx TX/FX* modules.

I N S T A L L A T I O N T I P

When testing, IMC Networks recommends you test your module first in an **unmanaged** environment. To do this, turn the SNMP management switch to OFF on an *iMediaCenter, or* remove the management module from an *iMcV Series* chassis. Follow the unmanaged configuration instructions (above), then install the module, connect the cables and test the LEDs. When finished, reactivate management and configure the unit via the software.

DIP Switch Location and Configuration Settings



Dip Switch Settings for *iMcV-MediaLinX TX/FX*		
S1	**Function**	**Default**
1	Auto-Negotiation	ON
2	TX Port: HDX(ON) or FDX(OFF)	OFF
3	TX Port: 100(ON) or 10(OFF)	OFF
4	*TX LinkLoss*	OFF
5	*FX LinkLoss*	OFF
6	FX Port: HDX(ON) or FDX(OFF)	OFF
7	*FiberAlert*	OFF
8	*Selective Advertising*	OFF
S2	**Function**	**Default**
1	Full-Duplex – Flow Control	OFF
2	Half-Duplex – Flow Control	OFF
3-8	Factory Default Do Not Change	

Auto-Negotiation & Selective Advertising Configuration Chart				
Desired Speed/Duplex	**Auto-Negotiation**	**Selective Advertising**	**Speed**	**Duplex**
100 Mbps FDX	ON	ON	100	FDX
100 Mbps HDX	ON	ON	100	HDX
10 Mbps FDX	ON	ON	10	FDX
10 Mbps HDX	ON	ON	10	HDX

NOTE: Selective Advertising is NOT an option when Auto-Negotiation is disabled.

Flow Control is used to throttle the END device to avoid dropping packets during network congestion. *Full-Duplex Flow Control will Advertise ONLY in Full-Duplex Mode. Full-Duplex Flow Control functions ONLY if link partner (end devices) also has Flow Control. Half-Duplex Flow Control DOES NOT Advertise.*

About LinkLoss and FiberAlert

iMcV-MediaLinX, TX/FX modules include the following troubleshooting features:

- *FX LinkLoss* (a.k.a. "*Fiber LinkLoss*" or just "*LinkLoss*")
- *TX LinkLoss* (a.k.a. *"Twisted Pair LinkLoss"* or *"Reverse LinkLoss*")
- *FiberAlert*

FiberAlert and *LinkLoss* are advanced troubleshooting features that can help locate "silent failures" on your network. However, it is vital that you understand exactly how *FiberAlert* and *LinkLoss* work, and how they will react in your network configuration, before attempting to install the enclosed module(s).

Installing modules without understanding the effects of *LinkLoss* can cause perfectly functioning units to appear flawed or even dead.

About Link Integrity

During normal operation, link integrity pulses are transmitted by all point-to-point Ethernet devices. When an IMC Networks media converter receives valid link pulses, it knows that the device to which it is connected is up and sending pulses, and that the copper or fiber cable coming from that device is intact. The appropriate "LNK" (link) LED is lit to indicate this.

The IMC Networks media converter also sends out link pulses from its copper and fiber transmitters, but normally has no way of knowing whether the cable to the other device is intact and the link pulses are reaching the other end. Both *TX* and *FX LinkLoss* allow this information to be obtained, even when physical access to a remote device (and its link integrity LED) is not available.

What Is FX LinkLoss?

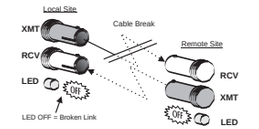
FX LinkLoss is a troubleshooting feature. When a fault occurs on the fiber segment of a conversion, *FX LinkLoss* detects the fault and passes this information to the twisted pair segment. If a media converter is not receiving a fiber link, *FX LinkLoss* disables the transmitter on the media converter's twisted pair port. This results in a loss of link on the device connected to the twisted pair port.

What Is TX LinkLoss?

TX LinkLoss is another troubleshooting feature. When a fault occurs on the twisted pair segment of a conversion, *TX LinkLoss* detects the fault and passes this information to the fiber segment. If a media converter is not receiving a twisted pair link, *TX LinkLoss* disables the transmitter on the media converter's fiber port. This results in a loss of link on the device connected to the fiber port.

What Is FiberAlert?

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the IMC Networks device at the receiver end notes the loss of link. The device will then stop transmitting data and the link signal until a signal or link pulse is received. The result is that the link LED on BOTH sides of the fiber connection will go out indicating a fault somewhere in the fiber loop. Using *FiberAlert*, a local site administrator is notified of a fault and can quickly determine where a cable fault is located.



IMC Networks product with *FiberAlert* enabled — Remote Site stops transmitting
Local Link LED is OFF indicating a break in the fiber loop

N O T E

FiberAlert should only be enabled on one side of a media conversion. Enabling it on both sides would keep both transmitters off indefinitely.

Using LinkLoss and FiberAlert

FiberAlert / LinkLoss Compared		
Feature	**Fault Location**	**Disabled LEDs**
FiberAlert	Fiber	Fiber
FX LinkLoss	Fiber	Twisted Pair
TX LinkLoss	Twisted Pair	Fiber

In a typical main site to remote site media conversion, IMC Networks recommends you enable your media converters' troubleshooting features as follows:

FX LinkLoss: Main Site
TX LinkLoss: Remote Site Only
FiberAlert: Remote Site Only

This will ensure that any faults, no matter where they occur, can be detected by an administrator at the main site. For more information on *LinkLoss* and *FiberAlert*, please visit the IMC Networks Web site at: **http://www.imcnetworks.com/tech/ref-features.asp**

If you are unsure of how best to implement these features in your configuration, please contact IMC Networks technical support at (800) 624-1070 (U.S. and Canada), +32-16-550880 (Europe) or via e-mail at: **techsupport@imcnetworks.com.**

AutoCross Feature for Twisted Pair Connections

The twisted pair port of the *iMcV-MediaLinX TX/FX* module includes *AutoCross*, a feature which automatically selects between a crossover workstation or pass-through/repeater hub connection depending on the connected device.

Auto-Negotiation, Duplex Mode and Speed

The twisted pair port on *iMcV-MediaLinX TX/FX* auto-negotiates for speed and duplex mode. These modules also provide the option of manually setting the speed and duplex mode if the connected devices do not have the ability to auto-negotiate, or when *Auto-Negotiation* is not preferred. The fiber port does not auto-negotiate; it is always 100 Mbps with Half- or Full-Duplex operation selectable through the switch settings or *iView²*.

Auto-Negotiation

iMcV-MediaLinX TX/FX ships from the factory with *Auto-Negotiation* enabled on the twisted pair port. In this mode, the twisted pair port negotiates for speed and duplex (i.e. the module autosenses 10 Mbps Full-Duplex, 10 Mbps Half-Duplex, 100 Mbps Full-Duplex or 100 Mbps Half-Duplex with Flow Control). Configure *Auto-Negotiation* on an *iMcV-MediaLinX TX/FX* by adjusting the DIP switch (for unmanaged modules) or via the management software. Please see page 2.

Selective Advertising

Selective Advertising, when used in combination with *Auto-Negotiation*, advertises only the configured speed and duplex mode for the twisted pair port. If *Selective Advertising* and *Auto-Negotiation* are both switched ON, the twisted pair port's speed (10 or 100 Mbps) and Duplex mode (FDX or HDX) can be separately configured per your requirements. (See the *Auto-Negotiation & Selective Advertising Configuration Chart* on page 2 for optional configurations using these features.)

If a specific speed and/or duplex mode is desired, it is recommended that you use Selective Advertising rather than Force Mode, when connecting to devices that ONLY auto-negotiate.

Forcing the Duplex Mode

The twisted pair and fiber ports on *iMcV-MediaLinX TX/FX* modules can each be manually configured for either Half- or Full-Duplex operation. Before manually setting the duplex mode, *Auto-Negotiation* must be disabled (Set Dip Switch 1 on S1 to OFF.)

- Configure the twisted pair port for Full-Duplex by setting Dip Switch 2 to the **OFF** position (Default).
- Configure the twisted pair port for Half-Duplex by setting Dip Switch 2 to the **ON** position.
- Configure the fiber port for Full-Duplex by setting Dip Switch 6 to the **OFF** position (Default).
- Configure the fiber port for Half-Duplex by setting Dip Switch 6 to the **ON** position.

Forcing the Speed

The twisted pair port on *iMcV-MediaLinX TX/FX* can also be manually set for 10 or 100 Mbps operation (the fiber port always operates at 100 Mbps). Before manually setting the speed, *Auto-Negotiation* must be disabled (Set Dip Switch 1 on S1 to the OFF.)

- Configure the twisted pair port for 10 Mbps operation by setting Dip Switch 3 to the **OFF** position.
- Configure the twisted pair port for 100 Mbps operation by setting Dip Switch 3 to the **ON** position.

Installing iMcV-MediaLinX, TX/FX Modules

iMcV-MediaLinX TX/FX modules may be installed in any IMC Networks *iMcV* series or *iMediaCenter* series chassis. Each module requires one slot in the chassis.

To install a module, remove the blank brackets covering the slots where the module is to be installed (if present) by removing the screws on the outside edges of the bracket. Slide the module into the chassis, via the card guides, until the module is seated securely in the connector. Secure the module to the chassis by tightening the captive screw. Save any "blanks" removed during installation for future use should your configuration requirements change.

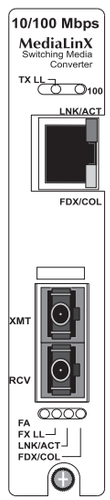
Installation Troubleshooting

- During installation, first test your fiber and twisted pair connections with all troubleshooting features disabled, then enable these features, if desired, just before final installation. This will reduce the features' interference with testing.
- When working with units where the features cannot be disabled, you must establish BOTH your twisted pair and fiber connections before the link LEDs will light!
- To test a media converter by itself, first make sure you have an appropriate fiber patch cable, then follow these steps to test:

Step 1: Connect the media converter to the twisted pair device with a twisted pair cable.
Step 2: Loop a single strand of fiber from the transmit port to the receive port of your media converter.
Step 3: Verify that you have both twisted pair and fiber link (see LED operation on following page) on your media converter.

- Make sure that you are using the appropriate twisted pair cable.
- The fiber transmitters used on IMC Networks' media conversion modules can overdrive the receivers and cause data loss if used in installations where cable power losses are low. To verify this, measure the optical power at the receiver. The measured power should be no greater than specified and no less than the Average Receive Sensitivity. For complete fiber specifications please visit our Web site at: **http://www.imcnetworks.com/adocs/fcs.asp**
  If measured power is greater than specified, install an optical attenuator to bring power within specification. Contact IMC Networks for more information.

LED Operation



Twisted Pair LEDs

TX LL Glows green when *TX LinkLoss* is enabled.
100 Glows yellow when 100 Mbps is selected on port.
LNK/ACT
- Glows green when a link is established on port.
- Blinks green when data activity occurs.

FDX/COL
- Glows yellow when port is in *Full-Duplex* mode.
- Blinks yellow when port is operating in *Half-Duplex* mode and collisions occur.

Fiber Optic LEDs

FA Glows green when *FiberAlert* is enabled.
FX LL Glows green when *FX LinkLoss* is enabled.
LNK/ACT
- Glows green when a link is established on port.
- Blinks green when data activity occurs.

FDX/COL
- Glows yellow when port is in Full-Duplex mode.
- Blinks yellow when port is operating in Half-Duplex mode and collisions occur.

General Information

IMC Networks Technical Support

Phone: (949) 465-3000 or (800) 624-1070 (in the U.S. and Canada)
+32-16-550880 (Europe)
Fax: (949) 465-3020
E-Mail: techsupport@imcnetworks.com
Web: www.imcnetworks.com

Specifications

Environmental
Operating Temperature: 32° - 104° F (0° - 40° C)
Storage Temperature: 0° - 160° F (-20° - 70° C)
Humidity: 5 - 95% (non-condensing)
Power Consumption (Typical)
Input Load: **500mA**

Fiber Optic Specifications
For fiber optic specifications, visit our Web site at:
http://www.imcnetworks.com/adocs/fcs.asp

Warranty Information:

Please contact IMC Networks for complete warranty information.

Fiber Optic Cleaning Guidelines

Fiber optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1) Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2) Dust caps are are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Assure that the fiber is properly terminated, polished and free of any dust or dirt and that the location is as free from dust and dirt as possible.
3) Store spare caps in a dust-free environment such as a sealed plastic bag or box so that, when reinstalled, they do not introduce any contamination to the optics.
4) Should it be necessary to disconnect the fiber device, reinstall protective dustcaps.
5) If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove dirt particles.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to your add-in modules. Always observe the following precautions when installing or handling an add-in module or any board assembly.

1) Do not remove unit from its protective packaging until you're ready to install it.
2) Wear an ESD wrist grounding strap before handling any module or component. If you do not have a wrist strap, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3) Hold boards by the edges only; do not touch the electronic components or gold connectors.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

4) After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the board over any surface.

Visit **www.mediaconverter.com** for a complete overview of media conversion products available from IMC Networks.

Questions or Comments about this manual? Contact **techdocs@imcnetworks.com**

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